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(54) Combined satellite and video recorder system

(57) A video recorder system 10 adapted to receive subscription television services is of the type which controls access to the subscription services by means of a smart card 26. Where payment is due for each programme received, the viewer is required to make a positive affirmation of purchase by pressing an affirmation button 30 as the programme is received. To enable reception in the absence of the viewer by use of the programmes 32, the programmer is provided with means actuable by the viewer when a programmer is being set into the programmer. An indication of whether an affirmation of payment is associated with the programme to be recorded is stored in the programmer, and when the programme to be recorded is received automatically authorises the descrambler control circuit 22 which charges the card 26 and enables the descrambler 16 as though the affirmation button had been pressed.

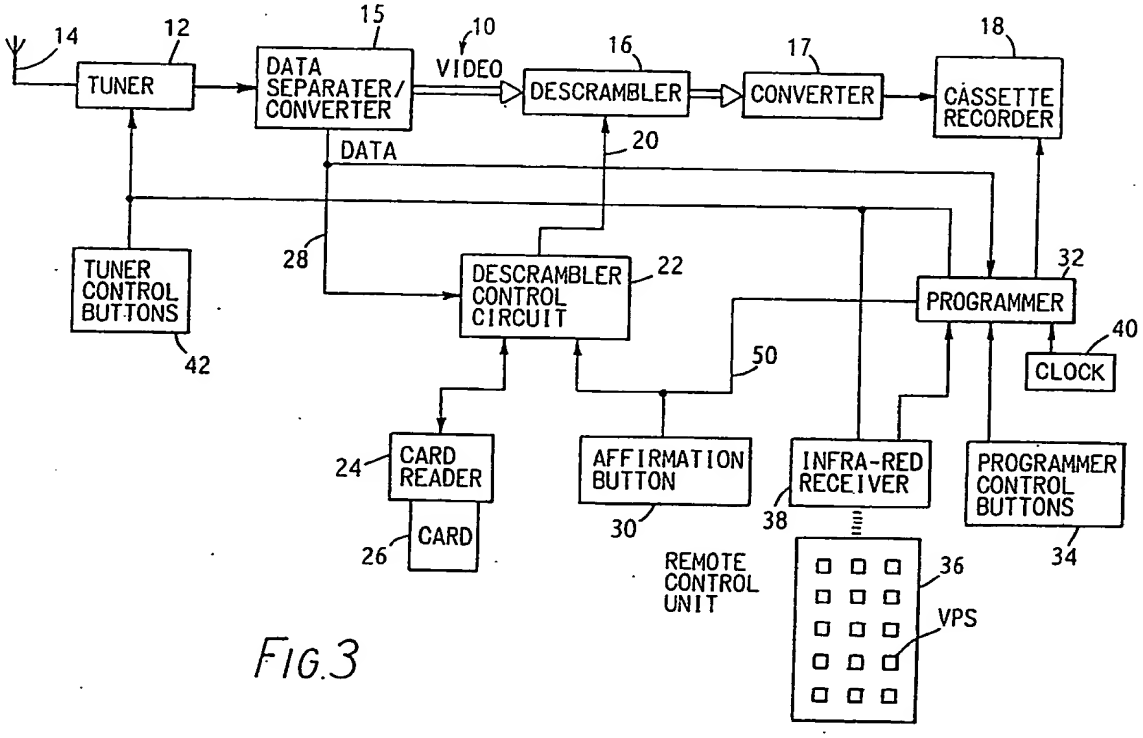

FIG.3

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1990.

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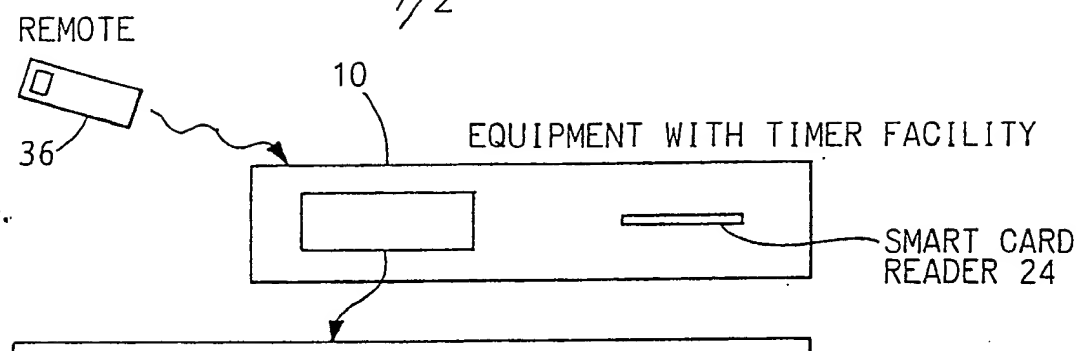

START DATE	END TIME	DATE	CHANNEL NO.	V.P.S.
10:00	10:30	26.6.91.	5	YES
11:50	13:25	30.6.91.	1	NO
23:40	00:30	5.7.91.	4	YES

FIG. 1

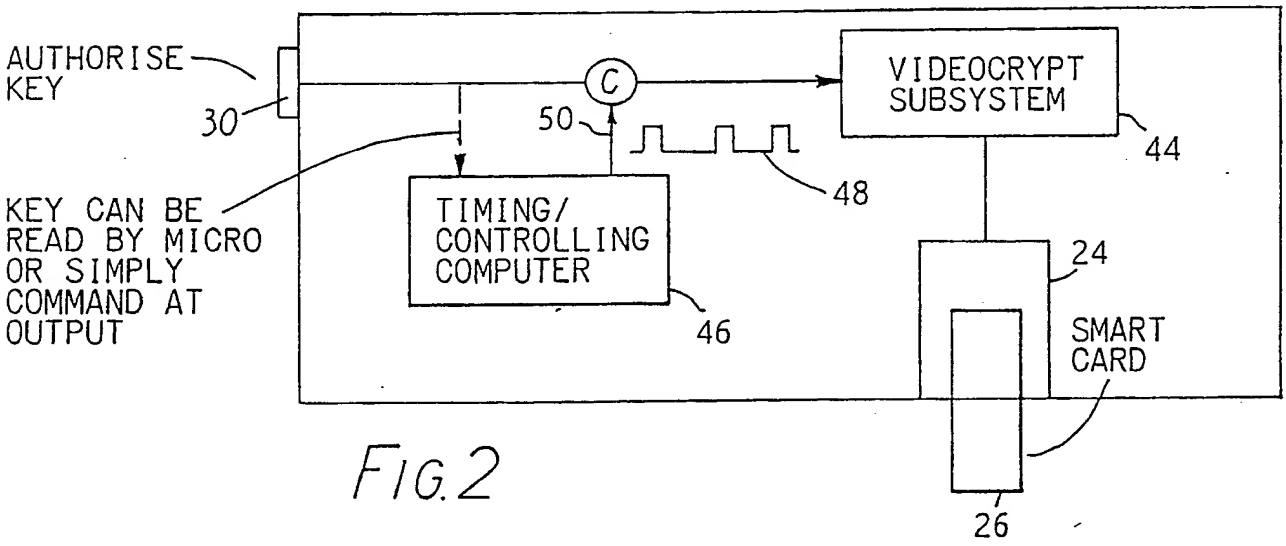

FIG. 2

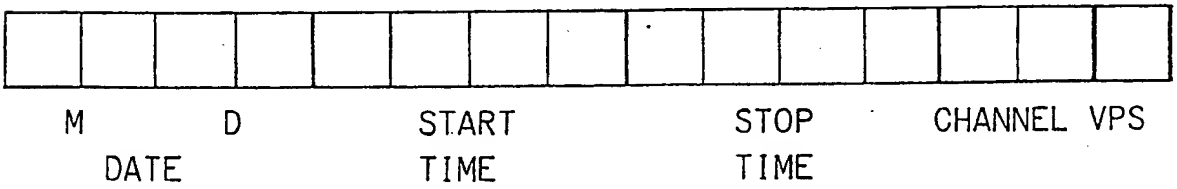

FIG. 4

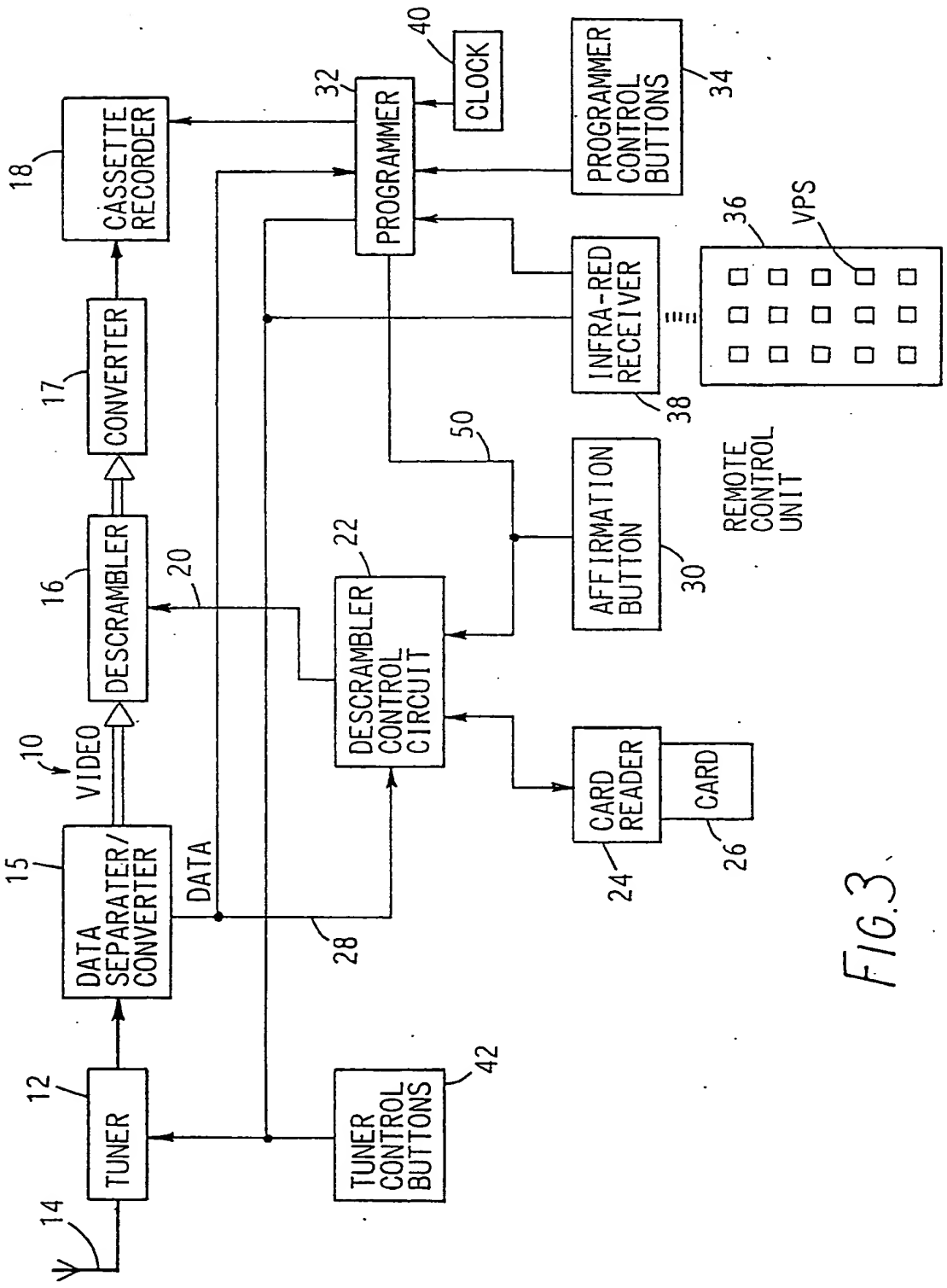
CASSETTE RECORDER
18
CONVERTER
17
DESCRAMBLER
16
VIDEO
10
DATA SEPARATER/ CONVERTER
15
DATA
TUNER
12
14
PROGRAMMER
32
CLOCK
40
PROGRAMMER CONTROL BUTTONS
34
INFRA-RED RECEIVER
38
VPS
36
REMOTE CONTROL UNIT
AFFIRMATION BUTTON
30
50
DESCRAMBLER CONTROL CIRCUIT
22
20
28
CARD READER
24
CARD
26
TUNER CONTROL BUTTONS
42

FIG. 3

VIDEO RECORDER SYSTEM

This invention relates to a video recorder system of the type comprising means for receiving an input video signal in scrambled form, a descrambler coupled to the receiving means for selectively descrambling the received video signal to generate a descrambled signal, recording means coupled to the descrambler to record the descrambled signal, enabling means for enabling the descrambler, the enabling means including means for reading a portable payment card carrying charging information, and means actuated by a viewer to confirm a charge operation with respect to the card to permit the enabling means to enable the descrambler, and programmer means programmable by a viewer to store data concerning a programme to be received at a future time and operative when the programme is received to activate the recording means.

Such a system is constituted by a video recorder adapted to receive so-called pay TV (television) or subscription television services to be broadcast by satellite TV systems for reception on satellite TV receivers. It is intended that pay TV systems, such as those known by the trade marks Videocrypt and Eurocrypt, should make use of smart cards to control access to services. A smart card is a plastics card the size of an ISO credit card but carrying an integrated circuit embedded within it. These systems may allow payment either by subscription, or by payment per event, or by tokens, namely time credited into the card. Payment by event or by tokens requires the viewer to make a positive affirmation of purchase each time a programme requiring payment is viewed. This affirmation or confirmation may be achieved by pressing a specified button or sequence of buttons.

We have appreciated that while such a system is fine for a television reciver, it has a serious drawback for video recorders. Typically video recorders may be programmed to record a programme at a future time. Information concerning the start time and stop time (or duration) of the programme and the television channel are set into a timer by the viewer, and will turn on the recorder at the

specified time to record the programme. Alternatively a programme code may be stored and compared with programme codes transmitted with the television signal. Such timers are well-known in the context of video cassette recorders and are included in some satellite TV receivers. The timers can be set by a hand-held remote control or directly on the recorder unit.

However we have appreciated that such a system can not be used to record a programme for which payment by event or payment by tokens is required, because such programmes require affirmation of payment as the programme is transmitted, and a major purpose of a video recorder is that it records programmes when the viewer is absent and thus is unable to make the necessary affirmation of payment.

According to this invention in a first aspect, in a video recorder system of the type defined at the beginning, the programmer means includes means actuable by a viewer when setting a programme to indicate affirmation of payment for the programme to be recorded.

According to the invention in a second aspect, in a video recorder system of the type defined at the beginning, the programmer means includes means for storing an indication of whether an affirmation of payment is associated with a programme to be recorded.

According to the invention in a third aspect, in a video recorder system of the type defined at the beginning, the programmer means is operative when the programme to be recorded is received to automatically authorise a charge operation with respect to the payment card.

The invention will now be described in more detail by way of example with reference to the drawings, in which:

Figure 1 is a very digrammatic drawing showing a video recorder system;

Figure 2 is a block diagram showing the main components of the control circuits for the recorder;

Figure 3 is a slightly more detailed block diagram of one possible implementation of the system; and

Figure 4 illustrates one possible form of stored data in the programmer to record a future programme.

The video recorder system 10 illustrated in Figures 1 to 3, and more particularly Figure 3, includes a tuner 12 for connection to a receiving antenna 14 in the form of a satellite dish. The tuner includes necessary down-conversion circuitry of known type. A data separator/converter 15 receives the output of the tuner and separates it into a video signal and a data signal. The video output of the circuit 15 is applied to a descrambler 16 which supplies a descrambled signal through a converter circuit 17 to a cassette recorder unit 18. The received signal is, or has programmes which are, scrambled such as by the so-called active line rotation method. The descrambler 16 has a control input 20 from a descrambler control circuit 22. This is coupled to a card reader 24 for reading a smart card 26 carrying charging information. The card may carry an indication that a subscription has been paid for some or all programmes, or a credit amount which is debited as viewing takes place, or a total indicating the accumulated charge for programmes viewed. The descrambler control circuit 22 receives the data output 28 from the circuit 15 containing information which is compared with information in the circuit 22 or derived from the card. More particularly the data may include a key which is used in a decryption operation in circuit 22 to provide a descrambling key for the descrambler. The data in circuit 22 or on the card 26 may be updated "off-air" by the transmitted data signal. The circuit 22 is also connected to a button 30 which can be actuated by a viewer to affirm a payment operation.

A programmer 32 is used to store information entered by a viewer as to programmes to be recorded at a future time. The information is entered by buttons 34 on the front of the recorder, or via a hand-held remote control unit 36 which communicates with a receiver 38 by an infra-red link. The programmer is connected to a clock 40. The information stored may be as indicated in Figure 4, including the date of the programme to be recorded (or a special code indicating "every day" or a specified day of the week), the start time, the stop time and the channel to which the tuner is to be set. Additionally the data includes a VPS (view pay system) code which indicates whether a special VPS button on the remote control unit was pressed when the viewer set the programmer to record this programme. This information is stored in the programmer 32.

In the programming operation, the viewer successively enters the data required, including the VPS code if appropriate. Where a remote control is used, the data can be transmitted digit by digit as entered, or can be stored in the remote control and displayed on an LCD display on the control. When all the data has been entered it is then transmitted to the recorder (so-called LCD programming).

The programmer continuously compares the stored start times with the clock output, and when a programme is to be recorded, sets the tuner 12 to receive the correct channel. In normal use the tuner can be set by tuner control buttons 42 or by use of the remote control unit. The programmer starts the cassette recorder 18. Additionally, the programmer sends a signal to the descrambler control circuit 22 mimicing that which it would receive if the affirmation button 30 were depressed at the time when the programme was being received. In this way the descrambler is enabled, subject of course to the card permitting reception of this programme. The descrambled signal from the descrambler 16 is then converted by the converter 17 into a form suitable for recording, and applied to the recorder 18. The card is meanwhile automatically debited with an amount corresponding to the cost of receiving that programme.

In practice the circuits shown in descrambler circuit 22 and programmer 32 may be constituted by a suitably programmed microprocessor. Also the various buttons shown separately in Figure 3 may in fact be the same buttons operated in different modes, in known manner.

In Figure 2 the descrambler 16 and descramble control circuit 22 are shown as a Videocrypt (TM) subsystem 44, and the programmer 32 as a timing/controlling computer 46 which provides pulses 48 on a line 50 to the subsystem 44. As indicated, the authorise key can be read by the microprocessor 46, or can simply provide a command signal.

In any event it will be seen from the above that when the programmer or timer is set to record a programme, an addition step allows the viewer to set the timer into a "view pay system" (VPS) mode to pay for the future programme. The special VPS key on the remote control unit is used, and if the VPS flag is set, the stored data is thereby marked to indicate that it concerns a programme which is to be paid for when it is received. When the programme is

received, the timer automatically turns on the recorder, and configures it to select the channel previously defined by the viewer. If the programme was marked with the VPS flag, then the payment procedure will be started. The payment method differs depending upon the type of pay TV system used.

With the Videocrypt system, "pay per view" and "pay by time" smart cards may be used in the future. To facilitate payment by either of these cards an authorise key exists, which the viewer presses to confirm payment. In the system described above, the timer microprocessor also has a control of or access to the authorise key, which it pulses for a specified time to confirm payment. The descrambler recognises this and debits the card accordingly.

With the Eurocrypt system, "pay per view", "pay by time" and "pay per programme" may all be used in the future. In this case the software performing the timing function usually also has control over the descrambling and payment process. The viewer is generally asked a question such as "Would you like to purchase this programme?" if it is pre-booked or available for purchase. There is no dedicated authorise key in a conventional receiver. In the system illustrated, if the timer has had the VPS flag set by depression of the VPS key during the programming operation, the software foregoes this question and automatically debits the card accordingly.

CLAIMS

1. A video recorder system of the type comprising means for receiving an input video signal in scrambled form, a descrambler coupled to the receiving means for selectively descrambling the received video signal to generate a descrambled signal, recording means coupled to the descrambler to record the descrambled signal, enabling means for enabling the descrambler, the enabling means including means for reading a portable payment card carrying charging information, and means actuated by a viewer to confirm a charge operation with respect to the card to permit the enabling means to enable the descrambler, and programmer means programmable by a viewer to store data concerning a programme to be received at a future time and operative when the programme is received to activate the recording means, in which the programmer means includes means actuable by a viewer when setting a programme to indicate affirmation of payment for the programme to be recorded.

2. A video recorder system of the type comprising means for receiving an input video signal in scrambled form, a descrambler coupled to the receiving means for selectively descrambling the received video signal to generate a descrambled signal, recording means coupled to the descrambler to record the descrambled signal, enabling means for enabling the descrambler, the enabling means including means for reading a portable payment card carrying charging information, and means actuated by a viewer to confirm a charge operation with respect to the card to permit the enabling means to enable the descrambler, and programmer means programmable by a viewer to store data concerning a programme to be received at a future time and operative when the programme is received to activate the recording means, in which the programmer means includes means for storing an indication of whether an affirmation of payment is associated with a programme to be recorded.

3. A video recorder system of the type comprising means for receiving an input video signal in scrambled form, a descrambler coupled to the receiving means for selectively descrambling the received video signal to generate a descrambled signal, recording means coupled to the descrambler to record the descrambled signal, enabling means for enabling the descrambler, the enabling means including means for reading a portable payment card carrying charging information, and means actuated by a viewer to confirm a charge operation with respect to the card to permit the enabling means to enable the descrambler, and programmer means programmable by a viewer to store data concerning a programme to be received at a future time and operative when the programme is received to activate the recording means, in which the programmer means is operative when the programme to be recorded is received to automatically authorise a charge operation with respect to the payment card.

4. A video recorder system substantially as herein described with reference to the drawings.

Patents Act 1977
Examiner's report to the Comptroller under Section 17 (The Search Report)

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Relevant Technical fields

(i) UK Cl (Edition K) G5R (RGA, RQA, RB83D, RAC); H4F (FDE);

(ii) Int CL (Edition 5) G11B; H04N

Search Examiner
MR P SLATER

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search
9 JUNE 1992

Documents considered relevant following a search in respect of claims ALL

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
	NONE	

Category	Identity of document and relevant passages	Relevant to claim(s)

Categories of documents

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